Operating instructions

CROSS BEATER MILL

PULVERISETTE 16

Valid starting with: 16.30xx/0101

Read the instructions prior to performing any task!

Translation of the original operating instructions

Fritsch GmbH
Milling and Sizing
Industriestraße 8
55743 Idar-Oberstein
Telephone: +49 (0)6784/ 70-0
Fax: +49 (0)6784/ 70-11
Email: info@fritsch.de
Internet: www.fritsch.de

Certifications and CE conformity

Certification

Fritsch GmbH has been certified by the TÜV-Zertifizierungsgemeinschaft e.V.

TGA-ZM-05-08-00

An audit certified that Fritsch GmbH conforms to the requirements of the DIN EN ISO 9001:2008.

CE Conformity

The enclosed Conformity Declaration lists the guidelines the FRITSCH instrument conforms to, to be able to bear the CE mark.

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1 Basic structure

1 Funnel
2 Handwheel for door lock
3 Collecting vessel, 5 L
4 Stand
5 Release lever for the motor brake
6 Transport screw
7 Main switch

2 Safety information and use

2.1 Requirements for the user

This operating manual is intended for persons assigned with operating and monitoring the Fritsch PULVERISETTE 16. The operating manual and especially its safety instructions are to be observed by all persons working on or with this device. In addition, the applicable rules and regulations for accident prevention at the installation site are to be observed. Always keep the operating manual at the installation site of the PULVERISETTE 16.

People with health problems or under the influence of medication, drugs, alcohol or exhaustion must not operate this device.

The PULVERISETTE 16 may only be operated by authorised persons and serviced or repaired by trained specialists. All commissioning, maintenance and repair work may only be carried out by technically qualified personnel. Qualified personnel are persons who, because of their education, experience and training as well as their knowledge of relevant standards, regulations, accident prevention guidelines and operating conditions, are authorised by those responsible for the safety of the machine to carry out the required work and are able to recognize and avoid possible hazards as defined for skilled workers in IEC 364.

In order to prevent hazards to users, follow the instructions in this manual.

Malfunctions that impair the safety of persons, the PULVERISETTE 16 or other material property must be rectified immediately. The following information serves both the personal safety of operating personnel as well as the safety of the products described and any devices connected to them: All maintenance and repair work may only be performed by technically qualified personnel.

This operating manual is not a complete technical description. Only the details required for operation and maintaining usability are described.

Fritsch has prepared and reviewed this operating manual with the greatest care. However, no guarantee is made for its completeness or accuracy.

Subject to technical modifications.

2.2 Scope of application

The main use of the cross beater mill is the pre- and fine grinding of brittle materials up to a Mohs hardness of 6. Because of the large range of available accessories, the cross beater mill is a device with many possible applications, mainly in the areas of chemicals and ceramics, in mining and in metallurgy, but also for the preparation of soil samples, etc. in the laboratory and in industry.

The achievable final fineness depends on the aperture size of the bottom sieve and the brittleness of the material for comminution. In the best case, a fineness of < 100 µm can be achieved.

Typical areas of application for soft materials:

Needles, leaves, cereals, resins, cellulose, chemicals, dried fruits, peat, seeds, dried materials of medium hardness.

Typical areas of application for materials of medium hardness:

Animal feeds, salts, pellets, coal, kaolin, spices, gypsum, drugs, potash, tablets, slag, minerals, ash, stones and earth (bauxite, limestone, dried clay, etc.), artificial resins, pyrite, cement clinker, coke, ores, refractory materials.

2.2.1 Operating principle

Comminution in the cross beater mill is performed by beating, impact and shearing. After feeding the material for comminution into the funnel, it enters the grinding chamber where the comminution process takes place between the beating cross, the grinding insert and the bottom sieve.

As soon as the material for comminution has reached the appropriate final fineness, it passes through the bottom sieve into the collecting vessel.

If a textile filter hose is used between the cross beater mill and the collecting vessel, a backup of the material caused by the air current created by the rotating beating cross is avoided, and an increase in material throughput is to some extent achieved.

This ensures a gentle comminution process.

2.3 Obligations of the operator

Before using the PULVERISETTE 16, this manual is to be carefully read and understood. The use of the PULVERISETTE 16 requires technical knowledge; only commercial use is permitted.

The operating personnel must be familiar with the content of the operating manual. For this reason, it is very important that these persons actually receive the present operating manual. Ensure that the operating manual is always near the device.

The PULVERISETTE 16 may exclusively be used within the scope of applications set down in this manual and within the framework of guidelines put forth in this manual. In case of non-compliance or improper use, the customer assumes full liability for the functional capability of the PULVERISETTE 16 and for any damage or injury arising from failure to fulfil this obligation.

By using the PULVERISETTE 16 the customer agrees with this and recognizes that defects, malfunctions or errors cannot be completely excluded. To prevent risk of damage to persons or property or of other direct or indirect damage, resulting from this or other causes, the customer must implement sufficient and comprehensive safety measures for working with the PULVERISETTE 16.

Neither compliance with this manual nor the conditions and methods used during installation, operation, use and maintenance of the PULVERISETTE 16 can be monitored by Fritsch GmbH. Improper execution of the installation can result in property damage and thus endanger persons. Therefore, we assume absolutely no responsibility or liability for loss, damage or costs that result from errors at installation, improper operation or improper use or improper maintenance or are in any way connected to these.

The applicable accident prevention guidelines must be complied with.

Generally applicable legal and other obligatory regulations regarding environmental protection must be observed.

2.4 Information on hazards and symbols used in this manual

Safety information

Safety information in this manual is designated by symbols. Safety information is introduced by keywords that express the extent of the hazard.

DANGER!
This symbol and keyword combination points out a directly hazardous situation that can result in death or serious injury if not avoided.

WARNING!
This symbol and keyword combination points out a possibly hazardous situation that can result in death or serious injury if not avoided.

CAUTION!
This symbol and keyword combination points out a possibly hazardous situation that can result in slight or minor injury if not avoided.

NOTICE!
This symbol and keyword combination points out a possibly hazardous situation that can result in property damage if not avoided.

ENVIRONMENT!

This symbol and keyword combination points out a possibly hazardous situation that can result in environmental damage if not avoided.

Special safety information

To call attention to specific hazards, the following symbols are used in the safety information:

DANGER!

This symbol and keyword combination points out a directly hazardous situation due to electrical current. Ignoring information with this designation will result in serious or fatal injury.

DANGER!

This symbol and keyword combination designates contents and instructions for proper use of the machine in explosive areas or with explosive substances. Ignoring information with this designation will result in serious or fatal injury.

DANGER!

This symbol and keyword combination designates contents and instructions for proper use of the machine with combustible substances. Ignoring information with this designation will result in serious or fatal injury.

WARNING!

This symbol and keyword combination points out a directly hazardous situation due to movable parts. Ignoring information with this designation can result in hand injuries.

WARNING!

This symbol and keyword combination points out a directly hazardous situation due to hot surfaces. Ignoring information with this designation can result in serious burn injuries due to skin contact with hot surfaces.

Safety information in the procedure instructions

Safety information can refer to specific, individual procedure instructions. Such safety information is embedded in the procedure instructions so that the text can be read without interruption as the procedure is being carried out. The keywords described above are used.

Example:

1. Loosen screw.
2.

   CAUTION!
   Risk of entrapment at the lid.

   Close the lid carefully.
3. Tighten screw.

Tips and recommendations

This symbol emphasises useful tips and recommendations as wells as information for efficient operation without malfunction.

Further designations

To emphasise procedure instructions, results, lists, references and other elements, the following designations are used in this manual:

Designation	Explanation
1., 2., 3. ...	Step-by-step procedure instructions
⇨	Results of steps in the procedure
📖	References to sections in this manual and relevant documentation
■	Lists without a specific order
[Button]	Operating elements (e.g. push button, switch), display elements (e.g. signal lamps)
'Display'	Screen elements (e.g. buttons, function key assignment)

2.5 Device safety information

Please observe!

- Only use original accessories and original spare parts. Failure to observe this instruction can compromise the safety of the machine.
- Accident-proof conduct is to be strictly followed during all work.
- Comply with all currently applicable national and international accident prevention guidelines.

CAUTION!

Wear hearing protection!

If a noise level of 85 dB(A) is reached or exceeded, ear protection should be worn to prevent hearing damage.

WARNING!

The maximum accepted concentration (MAC) levels of the relevant safety guidelines must be observed; if necessary, ventilation must be provided or the machine must be operated under an extractor hood.

DANGER!

Explosion hazard!

– When grinding oxidizable substances, e.g. metals or coal, there is a risk of spontaneous combustion (dust explosion) if the share of fine particles exceeds a certain percentage. When grinding these kinds of substances, special safety measures must be taken and the work must be supervised from a specialist.
– The PULVERISETTE 16 is not explosion protected and is not designed to grind explosive materials.

- Do not remove the information signs.

NOTICE!

Immediately replace damaged or illegible information signs.

- Unauthorised alteration of the PULVERISETTE 16 will void Fritsch's declaration of conformity to European directives and void the guarantee.
- Only use the PULVERISETTE 16 when it is in proper working order, as intended and in a safety- and hazard-conscious manner adhering to the operating manual. In particular, immediately rectify any malfunctions that could pose a safety hazard.
- If, after reading the operating manual, there are still questions or problems, please do not hesitate to contact our specialised personnel.

2.6 Protective equipment

Protective equipment is to be used as intended and may not be disabled or removed.

All protective equipment is to be regularly checked for integrity and proper functioning.

- If the mill is opened during operation, the motor stops within a very short time!
- The mill cannot be restarted while the grinding chamber is open.

2.7 Hazardous points

Procedure	Activity	Hazards
Safety	Damage to property and persons through non-observance of the safety instructions	Claims for damages will not be accepted in any form
Packaging	Please retain the packaging for the duration of the guarantee period	If following a complaint the device is returned in inadequate packaging, this could compromise the guarantee
Transport	Do not drop or throw the "PULVERISETTE 16" or subject it to shock during transport	Electronic or mechanical components could be damaged
Temperature fluctuations	In the case of fluctuating temperatures, protect the "PULVERISETTE 16" from condensation water	Electronic components could be damaged
Scope of delivery	If the delivery is found to be incomplete or if there is transport damage, you must inform the carrier and Fritsch GmbH immediately (within 24 hours).	Any claims received later might not be considered.
Environmental temperature	Falling below 5 °C Exceeding 40 °C	Electronic or mechanical components could be damaged. Performance data change to an unknown extent.
Humidity	Exceeding 80 % at temperatures up to 31 °C	Electronic or mechanical components could be damaged. Performance data change to an unknown extent.
Electrical connection	Electrical supply does not correspond with the values on the type plate	Electronic components could be damaged
	Before operating the device for the first time, the direction of rotation must be checked (see direction arrow on the motor).	If the direction of rotation is incorrect, the grinding performance will be inadequate and mechanical components could be damaged.

Safety information and use

Procedure	Activity	Hazards
Opening and closing the mill housing	Only close the door when the contact surfaces are absolutely free from comminuted material and other soiling.	Mechanical components and the door seal could be damaged.
	Do not open the "PULVERISETTE 16" when the motor is running.	When toxic materials or materials otherwise harmful to health are comminuted, there is a danger of breathing in dusts that are harmful to health.
	Do not open the "PULVERISETTE 16" and at the same time release the motor brake.	Risk of injury through the still-rotating beating cross.
Filling with material to be comminuted	Fill the funnel slowly and continuously with the material to be comminuted.	An excessive feed quantity can force the "PULVERISETTE 16" to a standstill and mechanical components could be damaged.
	Comminuted material in the form of dust can escape from the funnel during comminution. If toxic materials or materials otherwise hazardous to health are to be comminuted, use a dust extraction system.	Risk from breathing in materials hazardous to health.
	Some comminuted materials can form an explosive mixture with air. Check the properties of your material intended for comminution.	Explosion hazard!
Cleaning	Remove the mains plug before any cleaning operation.	Danger to life due to power surges
	Do not clean under running water	Danger to life due to power surges

3 Technical data

3.1 Dimensions

560 x 420 x 445 mm (height x width x depth)

With underframe: 1183 x 560 x 700 mm (height x width x depth)

3.2 Weight

Net weight approx. 36 kg

With underframe: Net weight approx. 58 kg

3.3 Operating noise

Emissions value of workplace according to DIN EN ISO 3746:2005
L_{Pa} = 86 dB(A).

Fill material: Quartz gravel, particle size <3 mm

Degree of fill of the grinding chamber: Fill quantity required for the motor to reach nominal power.

3.4 Drive motor

Single- and three-phase AC motor with brake

3.5 Speed

2850 min^{-1}

3.6 Power rating

1100 watts

3.7 Particle feed size

Max. 20 mm

3.8 Collecting vessel volume

5000 mL or 30000 mL

3.9 Protection class

IP 54

4 Installation

4.1 Transport

The device is delivered on a transport pallet with a wooden cover. We recommend using a forklift or pallet truck for transporting the packed device.

DANGER!
Do not step under the transport pallet during transport.

WARNING!
Improper lifting can lead to personal injury or property damage. The machine is only to be lifted with suitable equipment and by qualified personnel.

The guarantee excludes all claims for damage due to improper transport.

4.2 Unpacking

- Remove the screws fastening the lid and the side panels.
- Lift the lid and the side panels from the transport pallet.
- Compare the contents of the delivery with your order.

4.3 Setting up

DANGER!
Do not step under the transport pallet during transport.

CAUTION!
The weight of the cross beater mill is approx. 36 kg!

NOTICE!

Place the Cross beater mill on a flat, stable surface. It may be screwed to this or a base plate.

NOTICE!

Never operate PULVERISETTE 16 while it is standing on the transport pallet!

The cross beater mill is mounted on an underframe. Remove the screws and set the mill down on the required installation site with the help of the ring bolt.

4.4 Ambient conditions

WARNING!

Mains voltage!

- The device may only be operated indoors.
- The surrounding air may not carry any electrically conductive dust.
- Maximum relative humidity 80% for temperatures up to 31°C, linearly decreasing down to 50% relative humidity at 40°C.

- The room temperature has to stay between 5 - 40°C.
- Altitudes up to 2000 m
- Degree of pollution 2 according to IEC 664.

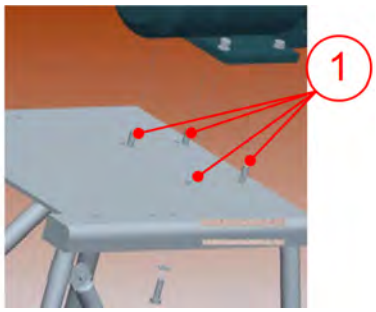
4.5 Setting up on a laboratory bench

You can mount the cross beater mill on a laboratory bench:

- Measure the thickness of the laboratory bench.
- Use screws with a maximum ∅ 8 mm and a length equal to the laboratory bench thickness + 25 mm.
- Place the cross beater mill together with the collecting vessel onto the bench.
- Mark holes on the bench for drilling using the existing holes of the cross beater mill motor.

The distance of the drill holes to the edge of the bench should be chosen such that the collecting vessel and the filter hose can be readily mounted and dismounted.

4.6 Fastening the Cross beater mill to the universal stand



1 Drill holes for fastening

1. Use two persons to lift the mill onto the stand.

CAUTION!

Hazard of tipping!

Secure the device against tipping until it is completely screwed down, as the centre of gravity allows the mill to tip forwards.

2. Then fasten the mill to the mounting plate using the supplied fastening materials.

4.7 Electrical connection

DANGER!

Provide short-circuit protection!

Risk of damage due to short-circuits.

– Make sure that the socket is connected to a mains line protected with a residual current circuit breaker.

CAUTION!

Ignoring the values on the type plate may result in damage to the electrical and mechanical components.

Before establishing the connection, compare the voltage and current values stated on the type plate with the values of the mains system to be used. (See *'Technical data' on page 15*)

- Connect the Cross beater mill to the electrical outlet using the supplied connecting cable.
- The supplied cable has no plug, as the type of plug depends on the installation site and the relevant regulations in the country.
- External fuse protection is to be provided for the connection of the mains cable to the mains according to the regulations at the installation site.

DANGER!

Mains voltage!

Changes to the connection line may only be made by a qualified person.

4.7.1 Rotation direction of the drive motor

(See the arrow on the motor housing)

DANGER!

Mains voltage!

Changes to the rotation direction may only be made by a qualified technician.

The three-phase AC motor must turn to the left when viewed on the drive side from the front. (The Cross beater mill viewed from the front in an anticlockwise direction; viewed from the rear in a clockwise direction.)

The single-phase motor is factory set to a left-turning direction of rotation; see:

DIN VDE 0530 Part 8 "Terminal Markings and Direction of Rotation"

DIN VDE 0530 Part 7 / EN 60 934-7 "Abbreviations for Models"

The direction of rotation is changed by swapping two supply lines "L1, L2, L3" (or the power supply line "U1, U2, U3" in the socket).

5 Initial start-up

CAUTION!
Never operate the device without the bottom sieve in place!

Risk of injury through possibly reaching in from below!

CAUTION!
Only operate the device with the collecting vessel mounted!

Switch on the device only after all work as described in section *'Installation' on page 17* has been carried out!

5.1 Switching on

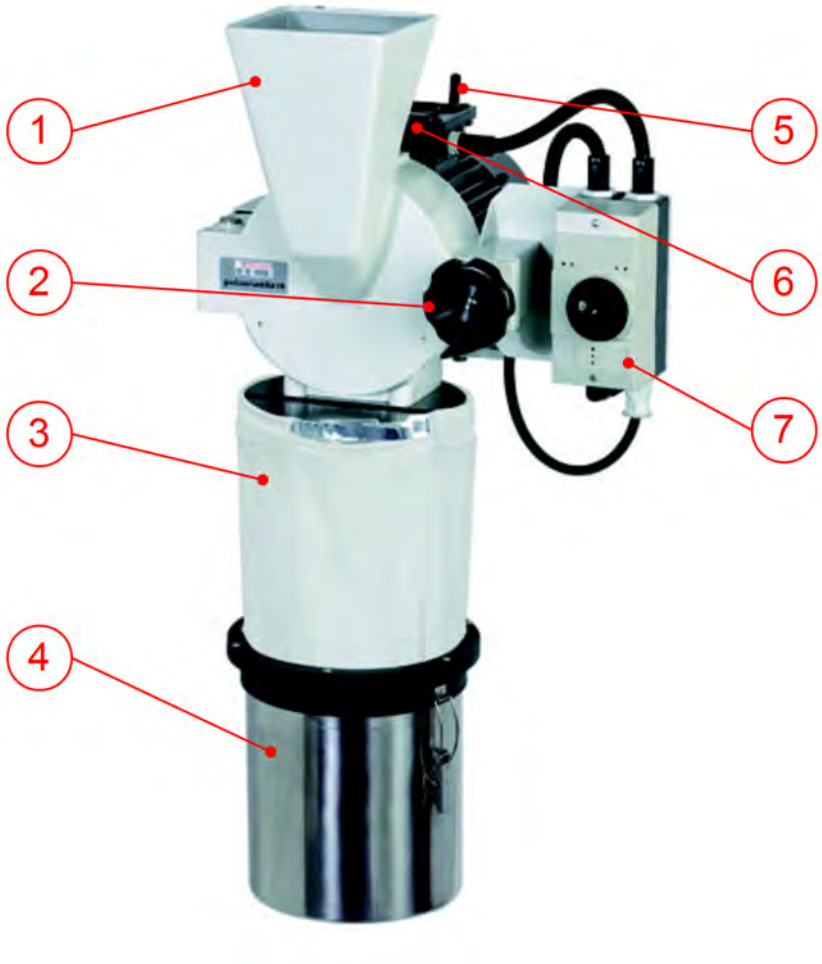
Close the grinding chamber and set the main switch to ON. The cross beater mill starts up.

5.2 Switching off

Set the main switch to OFF (0). The cross beater mill stops within one second!

6 Using the device

6.1 Operating elements and operation



1 Funnel
2 Door lock
3 Filter hose (optional)
4 Collecting vessel, 5 L
5 Release lever for the motor brake
6 Transport screw
7 Main switch

6.2 Operating elements and their functions

Item	Element	Task
1	Funnel on the door	Accepts the material to be comminuted up to a maximum particle size of 20 mm; is not intended for storage of the comminuted material; Securely prevents the comminuted material from spraying back
2	Handwheel for door lock	Opens and closes the door of the PULVERISETTE 16, tensions the door seal Pressed and turned clockwise = closes the door Pressed and turned anticlockwise = opens the door
3	Filter hose	Prevents a backup of material caused by the air pressure from the rotating beating cross and thus increases the material throughput.
4	Collecting vessel	Accepts the comminuted material.
5	Release lever for the motor brake	By pressing backwards, releases the motor brake to allow the beating cross to be turned manually for cleaning.
6	Transport screw	Prevents damage to mechanical and electrical components during transport
7	Main switch with rotary knob	Connects and disconnects the "PULVERISETTE 16" from the mains supply. ON = "PULVERISETTE 16" is switched on OFF = "PULVERISETTE 16" is switched off

6.3 Materials and analyses

Collecting vessel 5 L and bottom sieve made of stainless steel			
Material No.	1.4301		
Abbreviated name	X 5 CrNi 18 9		
Analysis	Fe	77,325	
	Cr	18,000	%
	Ni	02,500	%
	Mn	02,000	%
	Si	01,000	%
	C	00,070	%
	P	00,045	%
	S	00,030	%
Funnel and housing made of aluminium			
Material No.	239		
Abbreviated name	G-Al Si 10 Mg		
Analysis	Al	87,300	%
	Si	11,000	%
	Fe	00,500	%
	Mg	00,500	%
	Mn	00,400	%
	Ti	00,150	%
	Zn	00,100	%
	Cu	00,050	%
Grinding insert made of cast iron			
Abbreviated description	GG-20		
Analysis	Fe	93,600	%
	C	03,650	%
	Si	01,800	%
	Mn	00,550	%
	P	00,300	%

	S	00,100	%
Beating cross made of malleable cast iron			
Material No.	0.8083		
Abbreviated name	GTW-38		
Analysis	Fe	95,465	%
	C	03,250	%
	Si	00,650	%
	Mn	00,400	%
	P	00,055	%
	S	00,180	%
Impact plates made of special steel			
Material No.	1.2080		
Abbreviated description	X 210 Cr 12		
Analysis	Fe	84,890	%
	Cr	12,000	%
	C	02,200	%
	Mn	00,450	%
	Si	00,400	%
	P	00,030	%
	S	00,030	%

The percentage values for the analytical proportions represent mean values.

6.4 Opening and closing the mill housing

Open only when the "PULVERISETTE 16" is switched off.

- Turn the main switch (2) to the **OFF** position.
- Press the handwheel (1) and turn it anticlockwise to open the grinding chamber.
- Close the grinding chamber door.
- Press the handwheel and turn it clockwise to close the grinding chamber again.

CAUTION!

Do not open the Cross beater mill when the motor is running.

When toxic materials or materials otherwise harmful to health are comminuted, there is a danger of breathing in these dusts that are harmful to health.

CAUTION!

Do not open the "PULVERISETTE 16" and at the same time release the motor brake. Risk of injury through the still-rotating beating cross.

NOTICE!

Only close the door when the contact surfaces are absolutely free from comminuted material and other soiling.

Mechanical components and the door seals could be damaged.

6.5 Inserting the bottom sieve

Bottom sieves made of stainless steel with trapezoidal and round perforations are available as accessories.

Sieve sizes:

Trapezoidal perforation: 0.12, 0.2, 0.25, 0.5, 0.75, 1, 1.5, 2 mm

Round perforation: 3, 4, 5, 6, 8, 10 mm

1. Stop the PULVERISETTE 16.
2. Open the mill housing.
3. Insert the bottom sieve.
4. Adjust the impact plate gap: grinding insert - beating cross 1 mm; set the gap between the bottom sieve and the beating cross to not less than 1 mm.
5. Close the mill housing.
6. Start the PULVERISETTE 16.

CAUTION!

Never operate the device without the bottom sieve in place!

Risk of injury through possibly reaching in from below!

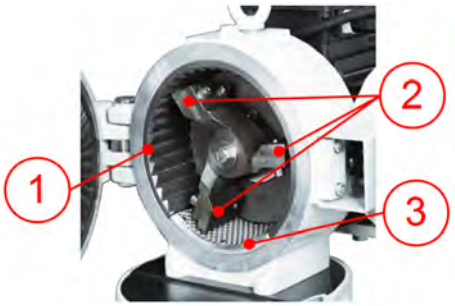
6.6 Adding material

The particle feed size should not be greater than 20 mm. Pour material slowly into the funnel. A rebound guard integrated into the funnel prevents material to be comminuted from spraying back out.

6.7 Resetting the impact gap

The gap between the grinding insert and the impact plates of the beating cross should be checked from time to time.

Loosen and tighten one impact plate after the other!



1 Grinding insert
2 Impact plates
3 Bottom sieve

1. Pull out the mains plug.
2. Open the mill housing.
3. Check the gap between the grinding insert and the impact plates using a feeler gauge (approx. 1 - 2 mm).

   In doing so, note that the gap between the grinding insert and the bottom sieve must not be less than 1 mm!

NOTICE!
The gap size between the grinding insert and the impact plates must under no circumstances be greater than 2 mm, as this can lead to damage to the device.

4. Adjust the gap between the grinding insert and the impact plate, if necessary.
5. Tighten the screws of the impact plate using an SW5 hexagon socket screw key.

7 Accessories

7.1 Filter hose and collecting vessel

Using a fabric filter hose between and the PULVERISETTE 16 and the collecting vessel allows the air flow created by the rotating beating cross to be exhausted and prevents a backup of material. Furthermore, it accelerates the material throughput and guarantees a gentle comminution process.

- Push the filter hose over the flange while holding the clip at an angle.
- Fasten the clip.
- Connect the collecting vessel.
- Fasten the closures.

If the collecting vessel is attached without a filter hose, the release of dust from the funnel must be expected.

8 Cleaning

DANGER!

Mains voltage!

- Before beginning with cleaning work, disconnect the mains plug and protect the device against being unintentionally switched back on!
- Do not allow any liquids to flow into the device.
- Indicate cleaning work with warning signs.
- Put safety equipment back into operation after cleaning work.

When switched off, the cross beater mill can be cleaned with brushes or possibly by using an industrial vacuum cleaner, but also with compressed air.

The motor brake can be deactivated for cleaning the grinding chamber. The beating cross can now be readily turned to make cleaning easier.

9 Maintenance

DANGER!

Mains voltage

- Before beginning with maintenance work, unplug the mains plug and protect the device against being unintentionally switched back on again!
- Indicate maintenance work with warning signs.
- Maintenance work may only be performed by specialised personnel.
- Put safety equipment back into operation after maintenance or repair work

We recommend keeping a safety logbook Chapter 13 'Safety logbook' on page 38, where all work (maintenance, repairs.....) performed on the device is entered.

- *The most important element of maintenance is regular cleaning:*
- *When cleaning the complete device, adhere to the guidelines of the Accident Prevention Regulation (BGV A3) - especially if the device has been set up in a dusty environment or if the processed source material produces dust.*

The impact gap must be checked from time to time, depending on the frequency of use and the comminution tasks performed. See *'Resetting the impact gap' on page 28*!

Furthermore, the following checks are necessary every six months:

- Limit switch on the door hinge, left
  - With an opening gap of max. 3 mm, the limit switch must switch off the motor.
- Limit switch on the quick release lock, right
  - When the handwheel is turned through a maximum of 45°, the motor brake must be activated.
- Motor brake
  - Start the device
  - Stop the device
  - If the braking time exceeds 0.5 seconds, please contact a service engineer

9.1 Beating cross

To change the impact plates or the grinding insert, the beating cross must be removed from the device. To do so, proceed as follows:

1. Open the grinding chamber.
2. Ensure that the motor brake is activated.
3. Remove the hexagon screw that secures the beating cross.
4. You can now remove the beating cross.
5. To replace the beating cross, proceed in the reverse order.

9.2 Grinding insert

It is possible to change the grinding insert, depending on the degree of wear. This is necessary, for example, when the impact plates are adjusted to their maximum point and the gap width is still too great, or when the grinding insert shows excessive wear.

You can remove the grinding insert as follows:

1. Open the grinding chamber.
2. Take out the beating cross by removing the hexagon screw.
3. Remove the three slotted screws from the rear wall of the grinding chamber.
4. The grinding insert can now be removed.
5. The insert in the grinding chamber door can also be taken out by removing three screws.
6. Install the new grinding insert in the reverse order.

NOTICE!

Remember to reset the impact plate gap. For this, see *'Resetting the impact gap' on page 28*.

10 Disposal

It is hereby confirmed that FRITSCH has implemented the directive 2002/95/EC of the European Parliament and Council from 27th January 2003 for the limitation of the use of certain dangerous substances in electrical and electronic devices.

FRITSCH has registered the following categories according to the German electrical and electronic equipment act, section 6, paragraph 1, clause 1 and section 17, paragraphs 1 and 2:

Mills and devices for the preparation of samples have been registered under category 6 for electrical and electronic tools (except for large stationary industrial tools).

Analytical devices have been registered under category 9, monitoring and control instruments.

It has been accepted that FRITSCH is operating only in the business-to-business area. The German registration number for FRITSCH is WEEE reg. no. DE 60198769

FRITSCH WEEE coverage

Since the registration of FRITSCH is classified for bilateral transactions, no legal recycling or disposal process is described. FRITSCH is not obliged to take back used FRITSCH devices.

FRITSCH declares it is prepared to take back used FRITSCH devices for recycling or disposal free of charge whenever a new device is purchased. The used FRITSCH device must be delivered free of charge to a FRITSCH establishment.

In all other cases FRITSCH takes back used FRITSCH devices for recycling or disposal only against payment.

11 Guarantee terms

Guarantee period

As manufacturer, FRITSCH GmbH provides – above and beyond any guarantee claims against the seller – a guaranty valid for the duration of two years from the date of issue of the guarantee certificate supplied with the device.

Within this guarantee period, we shall remedy all deficiencies due to material or manufacturing defects free of charge. Rectification may take the form of either repair or replacement of the device, at our sole discretion. The guarantee may be redeemed in all countries in which this FRITSCH device is sold with our authorisation.

Conditions for claims against the guarantee

This guarantee is subject to the condition that the device is operated according to the instructions for use / operating manual and its intended use.

Claims against the guarantee must include presentation of the original receipt, stating the date of purchase and name of the dealer, together with the complete device type and serial number.

For this guarantee to take effect, the answer card entitled "Securing of Guarantee" (enclosed with the device) must be properly filled out and despatched without delay after receipt of the device and be received by us within three weeks or alternatively, *online registration* must be carried out with the above-mentioned information.

Reasons for loss of the guarantee

The guarantee will not be granted in cases where:

- Damage has arisen due to normal wear and tear, especially for wear parts, such as: Crushing jaws, support walls, grinding bowls, grinding balls, sieve plates, brush strips, grinding sets, grinding disks, rotors, sieve rings, pin inserts, conversion kits, sieve inserts, bottom sieves, grinding inserts, cutting tools, sieve cassettes, sieve and measuring cell glasses.
- Repairs, adaptations or modifications were made to the device by unauthorized persons or companies.
- The device was not used in a laboratory environment and/or has been used in continuous operation.
- Damage is present due to external factors (lightning, water, fire or similar) or improper handling.
- Damage is present that only insubstantially affects the value or proper functioning of the device.
- The device type or serial number on the device has been changed, deleted, removed or in any other way rendered illegible
- The above-mentioned documents have been changed in any way or rendered illegible.

Costs not covered by the guarantee

This guarantee excludes any costs for transport, packaging or travel that accrue in the event the product must be sent to us or in the event that one of our specialist technicians is required to come to your site. Any servicing done by persons not authorised by us and any use of parts that are not original FRITSCH accessories and spare parts will void the guarantee.

Further information about the guarantee

The guarantee period will neither extend nor will a new period of guarantee begin in the event that a claim is placed against the guarantee.

Please provide a detailed description of the type of error or the complaint. If no error description is enclosed, we shall interpret the shipment as an assignment to remedy all recognisable errors or faults, including those not covered by the guarantee. Errors or faults not covered by the guarantee shall in this case be rectified at cost.

We recommend reading the operating manual before contacting us or your dealer, in order to avoid unnecessary inconvenience.

Ownership of defective parts is transferred to us with the delivery of the replacement part; the defective part shall be returned to us at buyer's expense.

NOTICE!

Please note that in the event that the device must be returned, the device must be shipped in the original Fritsch packaging. Fritsch GmbH denies all liability for any damage due to improper packaging (packaging not from Fritsch).

Any enquiries must include a reference to the serial number imprinted on the type plate.

12 Exclusion of liability

Before using the product, be sure to have read and understood this operating manual.

The use of the product requires technical knowledge; only commercial use is permitted.

The product may be used exclusively within the scope of applications set down in this operating manual and within the framework of guidelines put forth in this operating manual and must be subject to regular maintenance. In case of non-compliance, improper use or improper maintenance, the customer assumes full liability for the functional capability of the product and for damage or injury arising from violating these obligations.

The contents of this operating manual are subject in entirety to copyright law. This operating manual and its contents may not be copied, further distributed or stored in any form, in part or in whole, without the prior written consent of Fritsch.

This operating manual has been prepared to the best of our knowledge and checked for accuracy at the time of printing. FRITSCH GMBH assumes no guarantee or liability whatsoever for the accuracy or completeness of the contents of this operating manual, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, unless liability is expressly prescribed by applicable laws or jurisprudence.

FRITSCH GMBH expressly reserves the right to modify and/or update this operating manual without prior notice. The same applies to modifications and improvements to the products described in this operating manual. It is the responsibility of the user to ensure that they have the current version of this operating manual. For more information, please contact your local FRITSCH GMBH distributor or Fritsch GmbH, Industriestr. 8, D-55473 Idar-Oberstein.

Not all parts shown here are necessarily installed in the product. The buyer is not entitled to delivery of these parts. If interested, please contact your local FRITSCH GMBH distributor or Fritsch GmbH, Industriestr. 8, D-55743 Idar-Oberstein.

FRITSCH GMBH takes the greatest care to ensure that the quality, reliability and safety of your products are continuously improved and adapted to the state of the art. The supplied products as well as this operating manual conform to the current state of the art when they leave the sphere of influence of FRITSCH GMBH.

By using the product the customer agrees with this and recognizes that defects, malfunctions or errors cannot be completely excluded. To prevent risk of damage to persons or property or of other direct or indirect damage, resulting from this or other causes, the customer must implement sufficient and comprehensive safety measures for working with the product.

Fritsch GmbH excludes any liability, warranty, or other obligation to compensate for damages, regardless of whether this liability, warranty, or other obligation is explicit or implicit, contractual or arising from unlawful acts or prescribed contractually, by law, or otherwise. In no event shall the buyer be entitled to any compensation from Fritsch GmbH for any special, direct, indirect, coincidental or consequential damage, including but not limited to lost profits, lost savings, lost sales or financial loss of any kind or for compensation of third parties, for downtimes, for lost goodwill, for damage to or replacement of equipment and property, for costs or restoration of materials or goods related to the product or the use of our products, for other damage or injury to persons (including fatal injuries) or similar. The above exclusion of liability is limited by mandatory liability as prescribed by laws or jurisprudence. Liability for negligence is excluded in all cases.

No permission is given expressly, implicitly or otherwise for the use of patents, brands or other copyrights. We also assume no liability for copyright infringements or infringements of the rights of third parties arising from the use of this product.

Neither compliance with this operating manual nor the conditions and methods used during installation, operation, use and maintenance of the product can be monitored by Fritsch GmbH. Improper execution of the installation can result in property damage and thus endanger persons. Therefore, we assume absolutely no responsibility or liability for loss, damage or costs that result from errors at installation, improper operation or improper use or improper maintenance or are in any way connected to these.

13 Safety logbook

Date	Maintenance / Repair	Name	Signature

Date	Maintenance / Repair	Name	Signature

Safety logbook

Date	Maintenance / Repair	Name	Signature

Date	Maintenance / Repair	Name	Signature

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Fritsch GmbH
Milling and Sizing
Industriestraße 8
55743 Idar-Oberstein
Telephone: +49 (0)6784/ 70-0
Fax: +49 (0)6784/ 70-11
Email: info@fritsch.de
Internet: www.fritsch.de